

REMARKS

Section numbers herein correspond to like section numbers in the Office action.

1. Restriction Requirement Under 35 U.S.C. § 121

Claims 20-67 stand subject to a Restriction requirement under 35 U.S.C. § 121 to one of the following invention:

Group I, Claims 20-40 and 51-67, drawn to a process for clarifying water, classified in class 210, subclass 728.

Group II, Claims 41-48, drawn to a method for blending polymers, classified in class 252, subclass 181.

Group III, claims 49 and 50, drawn to a method for storing chemicals, classified in class 137, subclass 1.

This is to affirm the election made without traverse by attorney Robert M. Bowick on December 24, 2001 to prosecute the invention of Group I, claims 1-40 and 51-67.

Accordingly, claims 41-50 have been cancelled from this application, with applicant obviously having the right to prosecute the subject matter of Groups II and III in divisional applications.

5. Objection To The Disclosure

The disclosure stands objected to because of cited informalities. The objection is respectfully traversed.

"9I," in the specification on page 3, line 13 is cited in the Office action as appearing to be erroneous. By way of correction, "Figure 9I" has been amended to "Figure 9."

"Methacryloyioxyethyltrimethyl," in the specification on page 18, line 12 is cited in the Office action as appearing to be erroneous. By way of correction, "Methacryloyioxyethyltrimethyl" has been amended to "Methacryloxyethyltrimethyl," "Unites," in the specification on page 46 line 17 are cited in the Office action as appearing to be erroneous. By way of correction, "Color Unites" has been amended to "Color Units."

Although not cited in the Office action, applicant volunteers that on page 18, line 13, "Acryloyloxyethyltrimethyl" also appears to be erroneous, and by way of correction has been changed to "Acryloxyethyltrimethyl"

6. Objection To Claim 57

Claim 57 stands objected to under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The objection is respectfully traversed.

Claim 57 has been deleted.

7. Objection To The Specification

The specification stands objected to as failing to provide proper antecedent basis for the claimed subject matter as required under 37 C.F.R. 1.75(d)(1) and MPEP § 608.01(o). The objection is respectfully traversed.

Specifically, the ratios recited in claims 20-23 are noted as lacking clear antecedent basis in the specification.

Without addressing the issue of whether these ratios have clear antecedent basis in the specification, they have been amended out of the claims to more clearly claim the invention. The claims as now written are now believed to overcome the objection.

8. **Claim Rejection Under 35 U.S.C. 112**

Claims 20-25, 28, 29, 51-59 and 61 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection is respectfully traversed.

Specifically, in claims 20-22 "greater than 1/20," in claim 20 "greater than 1/60," and in claims 21-23 "greater than 1/150" are vague and indefinite because it is unclear how these terms further limit the claims.

Without addressing the issue of whether these ratios are indefinite, they have been amended out of the claims to more clearly claim the invention. The claims as now written are now believed to overcome the rejection.

Specifically, in claims 24, 25, 55, and 56, "the settled water" lacks antecedent basis. Independent claims 20-23 have been amended to recite that the "flocculated suspension" is "within a 'water phase'" Dependent claims 24 and 25 have been amended to refer to that "water phase." Claims 51-59 and 61 have been deleted.

Specifically, in claims 28, 29, and 51-54, "the raw unclarified water" lack clear antecedent basis.

Claims 51-54 have been deleted.

Claims 28 and 29 has been rewritten to provide proper antecedent basis.

"Hassick" Related Obviousness Rejections

In paragraphs, 10, 11, 12 and 15 various claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,800,039 to Hassick *et al.* ("Hassick"), either alone or in combination with other art. These rejections will be addressed together below.

10. Claims 20-22, 24-26, 28-33, 51-53, 55-59, and 61 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hassick *et al.* 4,800,039. The rejection is respectfully traversed.

Specifically, the Office action cites Hassick as disclosing a process for clarification of water substantially as claimed (col. 1 line 31 thru col. 3, line 51, and Table I). The Office action does note that "the claims differ from Hassick *et al.* by reciting that the polymers are added in specific weight ratios, and have a specific molecular weight.

11. Claims 35, 40, 62, and 65 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hassick *et. al.* as above, and further in view of Graham *et. al.* The rejection is respectfully traversed.

13. Claims 36, 38, 63, and 66 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hassick et. al. as above, and further in view of Reilly et. al. The rejection is respectfully traversed.

15. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hassick et. al, in view of Reilly et. al. as above, and further in view of Buchan et. al. The rejection is respectfully traversed.

In response, applicant submits that Independent claims 20, 21 and 22, as amended and their respective dependent claims, are patentable over Hassick at least by the required molecular weight limitations of the ammonium polymer (500,000 to 1,000,000 for claim 20, 1,000,000 to 5,000,000 for claim 21 plus a limitation that the water have an alkalinity greater than 50 ppm, and greater than 5,000,000 for claim 22). Unexpected results have been demonstrated by applicant for those molecular weight ranges of ammonium polymer.

Hassick broadly discloses treatment of "low alkalinity" water (i.e., alkalinity up to 150 ppm, see col. 2, lines 9-13) with dialkyl diallyl ammonium polymers having a molecular weight from about 1,000 to about 5,000,000 (col. 2, lines 62-65).

Examples 15-22 in Hassick are for 60-70 ppm alkalinity water, and Examples 23-74 in Hassick are for 150 ppm alkalinity treated with an aluminum polymer (aluminum chlorohydrate) in combination with:

Low MW PolyDMAAC (MW=3,000 to 4,000); or

Medium MW PolyDMAAC (MW=100,000-200,000); or

HighMW PolyDMAAC (MW=1,000,000 to 2,000,000).

Resulting final turbidity of the treated water ranges from 1.3 to 1.6.

The instant invention provides final alkalinity well below the 1.3 to 1.6 shown by Hassick, in most instances substantially below 1.

In support of the unexpected result of the claimed invention, the Examiner's attention is kindly directed to the examples listed in the table below.

Example/Figure	MW	Final Clarity
Ex 7	12,000,000	0.08
Ex 9	1,000,000 to 1,500,000	0.16
Ex 16	12,000,000	0.2
Ex 20	1,000,000 to 1,500,000	0.4-0.6
Ex 22	8,000,000	0.7
Ex 23	1,000,000 to 1,500,000	<1.0
Ex 23	12,000,000	<1.0
Ex 23	15,000,000	<1.0
Ex 23	(est) 15,000,000	<1.0
Ex 24	1,000,000	0.5
Ex 24	8,000,000	0.5
Ex 25	800,000	1.1
Ex. 27	1,000,000 to 1,500,000	0.7
Ex 27	500,000	1.1
Ex. 28	9,000,000	0.9
Ex 29	1,000,000 to 1,500,000	0.5
Fig. 3, Nos. 1, 2, 4-6, 11-14	1,000,000 to 1,500,000	0.2 to 0.7
Fig. 4, No. 12	1,000,000 to 1,500,000	0.9
Fig. 5, No. 2	1,000,000 to 1,500,000	0.9
Fig. 6	1,000,000 to 1,500,000	0.1 to 0.9
Fig. 7	1,000,000 to 1,500,000	0.1 to 0.7

Claims 65 and 66 are patentable over Hassick at least by the required "contacting the algae in the water with an effective amount of at least one ammonium polymer or blends thereof." Hassick does not disclose nor suggest that algae containing water can be treated.

"Kigel" Related Obviousness Rejections

In paragraphs, 13 and 14 various claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,830,388 to Kigel *et al.* ("Kigel"), either alone or in combination with other art. These rejections will be addressed together below.

13. Claims 23-29, 32, 54-57, and 60 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kigel et. al. The rejection is respectfully traversed.

Kigel et. al. is cited as disclosing (see col. 5 line 5 through col. 8 line 11) a process of clarification of water substantially as claimed. The Office action notes that the claims differ from Kigel et al. by reciting that the polymers are added in specific weight ratios, and the water has a specific turbidity. The Office action further notes that the ratios and turbidity or suspended solids content of the water disclosed in Kigel et. al. are considered patentably indistinguishable from the ratios and water recited in the instant claims, and would appear to include the instant ratios and turbidity. The Office action concludes it would have been obvious to one skilled in the art of water treatment to utilize the process of Kigel et. al. to treat water having the recited turbidity with the recited polymers, to aid in clarifying the water. The specific residual soluble aluminum and IOC contents, alkalinity, and NTU of the water, ratios utilized, and the addition of an aluminum salt, would have been an obvious matter of process optimization to one skilled in the art, depending on the specific water treated and results desired, absent a sufficient showing of unexpected results.

15. Claims 34, 35, 37, 39, 40, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kigel et. al. as above, and further in view of Simmsgeiger. The rejection is respectfully traversed.

Again, applicant respectfully submits that unexpected results are obtained for the claimed invention. Reference is made to the above arguments.

17. **Double Patenting**

Claims 20-22, 24-26, 28-33, 36-38, 51-53, 55-59, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,120,690. The rejection is respectfully traversed.

It is respectfully requested by applicant that this Double Patenting rejection be held in obeyance until claims are otherwise allowable in this application. More than likely, a terminal disclaimer will be filed.

It is requested that applicant verify the accuracy of Tokumitsu 5,546,045 cited on the PTO-1449. New counsel for applicant has reviewed U.S. Patent No. 5,546,045 on line, and does not understand its relevance to this application, and if the Examiner is of the opinion that the '045 patent is not relevant, suggests that it be removed from the art of record.

In view of the above arguments, prompt allowance of all pending claims is respectfully requested.

If it would be of assistance in resolving any issues in this application, the Examiner is kindly invited to contact applicants' attorney Mark Gilbreth at 713/227-1200.

Respectfully submitted,



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